Simon Kwong

415-928-9811 | skwong5@ucsc.edu | https://www.linkedin.com/in/sikwong2 | https://github.com/sikwong2 |
https://uowis.vercel.app

EDUCATION

University of California Santa Cruz Santa Cruz, CA

Bachelor of Science in Computer Science *Aug. 2020 – June 2024*

Relevant Coursework: Computational Models, Computer Architecture, Analysis of Algorithms, Principles of Computer System Designs, Artificial Intelligence, Database Systems, Fullstack Web Development

EXPERIENCE

Tutor January 2023 – June 2024

University of California Santa Cruz *Santa Cruz, CA*

- Helped students develop an understanding of basic data structures and algorithms
- Taught students how to debug code and write unit tests

PROJECTS

Daily | *Bun, Next.js, React, Postgres*

- Built a full-stack habit tracking web application enabling users to create, visualize, and track daily habits through an interactive calendar interface, by implementing authentication, CRUD operations, and real-time data persistence using Next.js, React, TypeScript, Bun runtime, and Supabase.
- Engineered secure user authentication with bcrypt password hashing and session management while maintaining mobile-first responsive design with dark/light theme support, ensuring cross-platform accessibility and data privacy across modern web browsers.

UCSC-Amazon | *Node, Express, React, Postgres*

- Developed an e-Commerce application with product catalog, user accounts, cart functionality, and checkout, enabling customer purchasing with product inventory management.
- Created and integrated RESTful APIs and GraphQL for seamless communication between the frontend and backend systems.
- Created backend using microservices architecture to manage products, user accounts, facilitate secure payment processing, and order history which allows for easy maintainability, scalabity, and better management.

Multithreaded HTTP Server | *C*

- Built multithreaded HTTP server in C utilizing thread-safe data structures to handle concurrent client requests.
- Implemented thread synchronization and mutual exclusion for safe concurrent access to shared resources.
- Designed custom queue data structure with mutexes for thread-safe request processing which ensures no race conditions or deadlocks occur.

Huffman Coding | *C*

- Developed a complete Huffman Coding file compression system in C that processes input from stdin and files, achieving lossless data compression with configurable output to stdout or specified files.
- Implemented frequency analysis and priority queue data structures using custom binary heap operations, enabling optimal Huffman tree construction for efficient character encoding

Schmidt-Samoa Cryptosystem | *Python*

- Built an implementation of the Schmidt-Samoa Cryptosystem with encryption, decryption, and key generation functionality in Python.
- Generated large pseudorandom prime numbers by checking with the Miller-Rabin primality test for secure public and private keys.
- Built encryption/decryption functions utilizing number-theoretic operations which ensure message security.

TECHNICAL SKILLS

Languages: Python, C/C++, SQL (Postgres), JavaScript/Typescript, HTML/CSS, Go
Frameworks: Node.js, React, Express, NextJS, Shadcn, TailwindCSS
Developer Tools: Git, Docker, Postman, Vim, Bash, Unix